Summary of Differences

Between

RSTS/E V6B-02 and RSTS/E V6C-03

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0.0 SUMMARY.

As you know, RSTS/E V6C has been officially released. In fact, many of you may have already received it. RSTS/E V6C was intended as primarily a maintenance release of V6B. As such it does not contain much new functionality. This paper is intended as a summary of the new features and changes that have taken place.

NOTE

The information in this document is believed to be accurate. However, it is subject to change without notice and should not be construed as a commitment by DIGITAL EQUIPMENT CORPORATION.

0.1 STRUCTURE.

The structure of this paper is such that the section numbers used in the remainder of this paper correspond as closely as possible to the component.subcomponent numbering system as possible to the appropriate numbers in the Software Release Notes.

1.0 INIT.SYS

INIT.SYS modifications include support for the follow-ins new hardware:

1. 11/60 error lossins, cache control and error recovery.

   INIT has been improved to correctly handle the 11/60 processor with resard to the above items.

2. ECC MOS memory for 11/60 and 11/70

3. TM03/TE16

4. RM03

5. DMC11

6. Modify REFRESH option to recosnize and process disk volume<s) that have files > 65k blocks.

   The REFRESH option has been enhanced in both the LIST and CLEAN suboptions to accomodate disk files with sreater than ~~65K~~ 64K blocks. The LIST suboption displays the correct number of blocks for larse files and the CLEAN operation correctly sets up the disk available table when there are disk files with breater than 65K blocks.

2.0 SYSGEN.

Modify to include the followins:

1. TM03/TE16

2. RM03

3. DMC11

4. Include support for the Automated Patchins prosram ONLPAT.

   The Automated Patchins prosram ONLPAT is included to facilitate the installation of mandatory patches for the components of the RSTS/E Monitor, includins INIT.SYS, SYSGEN.SIL, RSTS.SIL, and BASIC.RTS.

   Documentation for the ONLPAT prosram is found in Charter 9 of the System Manaser's Guide.

5. Slisht modification of the SYSGEN dialosue. New

questions for the RM03, DMC11, etc. Modification to BASIC-PLUS questions for FUNCTIONS to specifically inquire about TRIG and LOG functions.

6. There are several hidden options to SYSGEN. If you specify Y/T to the "GENERATE MONITOR" question, CTRL/T, a quickie SYSTAT is included. This is done at the Terminal Driver level and so does not effect the running of your Job. A Y/L answer to the same question sets you a fancy lights pattern for 11/70 and 11/45 processors. To set both, answer Y/T/L. The options do cost you about 256 words for the fancy lights and 100 or so words for CTRL/T. Note that neither of these options are supported DEC features, and as such no SPRs will be honored. DECUS is responsible for answering CTRL/T problems, of which there are a few.

3.0 EXECUTIVE.

Modifications/enhancements include:

1. 11/60 error logging, cache control and error recovery.

2. ECC MOS memory for the 11/60 and 11/70.

3. TM03/TE16.

   The TM03 controller/formatter allows the hardware to detect density/ parity settings automatically. This required several modifications to the TE16 tape driver.

4. RM03.

   The RM03 driver is a new driver.

5. DMC11.

   The DMC11 is accessible to the user as an I/O device with or without the inclusion of the DECNET/E software.

6. A new executive SYS() call that allows one Job to create another Job.

   The Job Spawning Executive call makes it possible to create another Job without tying up a Pseudo-Keyboard. The call creates a new Job, enters the required Run-Time System, and runs the required program. A parameter word is passed whose function is exactly that of the CCL parame-

ter word. Ten additional bytes of information are loaded into the Core Common resion of the newly created Job. Data returned to the creating Job is the Job number times 2 of the newly created Job. The programming manual contains a partial (incorrect) description of the SYS call format. The following information is used in addition to the manual:

The manual incorrectly describes Byte 2. It should contain 24.

The entry conditions into the program are as follows:

Lossed out, therefore priveleged.
Detached from KB0:
Priority is 0.
BASIC-PLUS programs start at the line specified in bytes 27-28.
Core common of the spawned Job contains bytes 13-22 of the SYS() call (10 bytes). Byte 11 contains the Job Number times 2 of the spawning Job.

The ProJect-Programmer number MUST be present. The BASIC-PLUS Run-Time System checks this field to see if the Job was spawned.

7. Several enhancements have been made to terminal processing. Among them is RETYPE (CTRL/R). This function is particularly useful on non-scope terminals. After typeing a line which has characters delete by RUBOUT, and before typing a line delimiter, typing CTRL/R will cause the system to retype the entire line with the deleted characters removed, allowing the user to inspect the exact text to be transmitted. This function may be enabled or disabled with TTYSET.

4.0 BASIC-PLUS.

1. Addition of the capability to handle appropriately the case of a Job spawned by another.

i-4 2. Include USING(?) keyword for GET/PUT.

The GET and PUT statements have been enhanced to use partial contents of b buffers, not necessarily starting at the beginning of the buffer. This has been documented in Chapter 12 of the BASIC-PLUS Language Manual.

3. Include BLOCK keyword for GET/PUT.

The BLOCK keyword is recosnized as a synonym for RECORD in GET and PUT statements. It takes inteser as well as floatins-point expressions for block numbers. This eliminates complex unsisned inteser conversions for lerse files.

5.0 RSTS/E 2780 Device Driver.

No chanses.

6.0 Unassisned.

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8.0 Unassisned.

9.0 Unassisned.

cannot do 6C gen on line w/6B

10.0 System Utilities Package.

10.2 BUILD.

1. Redesigned to take advantage of logical device names.

2. Magtape Parity and Density characteristic specification has been added.

3. Termination of the BUILD procedure is now possible by typing CONTROL-C.

10.3 DIRECT.

1. Checks for DR: (RM03) is acceptable as a device name.

2. Indications for contiguous file, No-delete file, OPENed file, allocation quantity, and marked file. These are handled by the addition of several new switches. They are:

   a) "OP" gives an ACCESS count of the number of programs that have this file OPENed, and an indication if the file is opened for update;
   b) "AL" gives blocks allocated rather than file size;
   c) "MD" gives indication if file is marked for deletion;
   d) "RT" displays the Run-Time System that created the file; and
   e) "N" which prints only those entries that do NOT match the file specification given.

3. Add full wildcard capability for magtape.

   DIRECT now has full tape (both magtape and DECtape) listing capabilities. In addition, the volume ID is printed on ANSI magtapes. DIRECT no longer chains to PIP to perform directory operations.

10.4 DISPLY.BAS
10.5 VT05.BAS
10.6 VT50.BAS

No changes.

10.7 Unassigned.

10.8 DSKINT

1. Can now DSKINT RM03 online.

2. Conforms with DSKINT option of INIT.

   Allows the use of old bad block information if disk was previously a RSTS/E file structured disk.

19.0 GRIPE

No changes.

10.10 INIT

Can now be terminated by typing CONTROL-C.

10.11 INUSE

The INUSE program no longer requires privileges to run.

10.12 LOGIN

No changes.

10.13 LOGOUT

Restructure function of /"I" switch.

The LOGOUT program temporarily drops its privileges during the file deletion phase to prevent the user from deleting files which are protected from the user.

10.14 MONEY

No changes.

10.15 ODT

Now prints a more appropriate error message if write access is not selected to memory or a file.

10.16 PLEASE
10.17 PRIOR
10.18 QUOLST
10.19 REACT
10.20 REORDR

No changes.

10.21 SHUTUP

Restriction of typing carriage returns during SHUTUP run removed.

10.22 SYSCAT

No change.

10.23 SYSTAT

1. Display "non-swappable" (NSW) Job state. This is in addition to the "LCK" state which represents a temporary non-swappable status.

2. Displays maximum Job size for Run-Time Systems. This is the lesser amount of either the Run-Time System's maximum Job size or the System's Swap Maximum.

10.24 TALK

No change.

10.24 TTYSET

1. Remove implied speed settings from macro definitions.

2. Include speed-up optimizations.

3. Include macro definitions for LA180S and LS120.

4. Remove dependency on $TTYSET.SPD. This file is no longer required unless special modifications have been made to the device's speed group settings. This specifically applies to DC11's modified to support 1200 baud.

10.26 UMOUNT

Accepts switches for magtape density and parity settings. Recognizes and verifies volume-id information for ANSI magtapes.

10.27 UTILTY
10.28 UTILT1

A patch to allow specification of an asterisk as the extension for programs in the CCL command will appear shortly.

10.29 SWITCH

A new program to switch to another Run-Time System. Detects errors if the Run-Time System isn't ADDed, doesn't exist on the disk, or isn't a Keyboard Monitor. To switch back to the default RTS, enter a null line to SWITCH.

11.2 COPY

Support for RM03 disks.

11.3 EDIT
11.4 EDITCH
11.5 FILCOM

A fatal error is printed whenever an operation is attempted on a file with attributes which indicate non-ASCII stream data.

11.6 FLINT

No changes.

11.7 PIPSML

Change default transfer mode from formatted ASCII to block mode.

11.8 PIPEXT

1. change default transfer mode from formatted ASCII to block mode.

2. Use the full features of the Monitor Filename STring Scan. These include the use of the /MODE switch.

3. Addition of warning messages when attempting to copy files with attributes.

11.9 RUNOFF

No changes.

11.10 BPCREF, BPCRF1

This new program produces a cross-reference listing from a compiled BASIC-PLUS program. Options include allowing the inclusion of the source program in a formatted listing.

11.11 PMDUMP

This new program produces a formatted listing from a Post-Mortem Dump file. These files are produced on a fatal error exit from a program running under the RSX emulator or one of its derivitives, including BP2COM and BASIC2.

12.0 Error Control Package

12.1 ANALY1

No changes.

12.3 ANALYS

Automatically invoke ERRDIS to perform error printout.

12.4 ERRCPY

No change.

12.5 ERRDET

Add new devices and add new information to headings.

12.6 ERRDIS

Add new devices; log more of input dialogue.

12.7 ERRINT

Make prompts start on new line.

12.8 ERRDAT

New program to generate error logging data tables.

13.0 BACKUP Package.

Major enhancements include the provision of the capability to bypass label checking. Also gives more information on the MOUNTs and DISMOUNTs performed.

14.0 Spooling and Operator Services Package

Changes include the removal of the $COBOL statement from BATCH. (You now get an error message.) You now access the COBOL compiler by entering "$RUN $COBOL" and following it with your command line, or by installing the "CBL" CCL and running it by "$CBL <command line>." The $SORT command has been modified to conform to SORT-11 Version 2.

15.0 User Environment Test Package

Major enhancements include addition of exerciser for RM03, and modification of code necessary for the TM03.

17.0 Automated Patching Facility.

This is perhaps the most major new feature of RSTS/E V6C. RSTS/E is the first major DEC operating system to have an automated patching facility. Patching of both the Operating System, Run-Time System, and Utility code is possible with little or no user intervention. Users will receive an AUTOPATCH tape (disk or whatever) with their kit with all the patches that have been released in Software Dispatch articles to the nearest quarter. Then once a quarter, the AUTOPATCH kit will be resubmitted to DEC's Software Distribution Center (SDC). You will not automatically receive this version, but you can order it for a media charge. (this needs to be verified.) New systems ordered will automatically receive the updated kit.

20.0 Run-Time System Support Package.

1. RMS-11 is now automatically distributed with every system. Note that this is NOT RMS-11K.

2. The package support for COBOL-11 V2 (and RPG-II V7.06) is obsolete and no longer provided. Note that this means RPG users should wait for the update package to become available before upgrading your system software.

3. RSX.RTS now includes a keyboard monitor. It is not functional enough to be supported as a default system RTS, and use of it as a Job default RTS is not recommended.

4. RSX.RTS now has a Post-Mortem dump facility. This will produce a file called PMDnnn.PMD (nnn is your Job number) on the disk after abnormal task exits. The task must have been built with the /PM switch.

5. TKB now looks to see if there is enough contiguous disk space for the task and if so allocates the task as a contiguous file. If there isn't enough, the file is allocated in the normal fashion.

6. SYSLIB routines have been upgraded to allow the use of logical names and the special PPN designators. This does NOT apply to RMS-11 or RMS-11K yet.

7. PAT.TSK is now part of the standard distribution kit. It is intended primarily as a software maintenance tool. If you need more information, order the appropriate RSX-11M manual.

8. Incorporation of EDT, the new DEC standard editor and appropriate documentation.

9. Production and distribution of a RSTS/E TASKBUILDER manual. It is aimed at the BASIC-PLUS-2 or COBOL user. More information is available in the RSX-11M TKB manual.

22.0 RT-11 Emulator Package.

1. Upgraded to include RT-11 V3 features.

2. HOOK.SAV includes support for new devices.

3. PIP.SAV is now a compatible sub-(or super-) set of PIPEXT. It is written in MACRO-11 and thus is very fast and efficient for file transfer operations. In addition, it includes full support for copying files with attributes, such as those produced by RMS-11K. This is the PIP now recommended for normal use.

4. Since RT-11 has been upgraded to V3, FORTRAN-IV version ~~2~~1 is not supported under V6C. Instead, order Version 2. This new release of FORTRAN-IV includes in-line code generation for some operations. User selectable options exist for in-line code generation for EIS, FIS and EAE machines. In line code for FPU is not generated, but the OTS does make use of FPU instruction. In-line code for the FPU is only available under FORTRAN-IV-PLUS, which is not available under RSTS/E at this date.

NOTE

DIGITAL's official position on the use of ANY Run-Time System other than BASIC as a system default Run-Time System is that it is UNSUPPORTED!!!

While it is true that there may be many compelling reasons to use it, and the fact that several sites have actually done it, it must be stressed that other Run-Time Systems have not been designed or tested as System RTS'S. Therefore, DEC will accept SPRs that reference BP2COM, RSX, and RT11 as a default RTS only of a FYI basis.

Do not get the impression that we are ignoring this particular area. Far from it; DEC has an active on-going effort to produce a BASIC-PLUS-2 only system. However, it must wait for a future version of BASIC-PLUS-2. The current version cannot be effictively patched to do the job.

We actively encourage anyone who has used BP2COM, RSX or RT11 as a default RTS to communicate with us regarding their experiences.

XX.XX Other Software Packages.

1. TECO and RNO have been available from the DECUS library and are widely used by many users of RSTS/E. They are included on the distribution kit for vóc for the convenience of those users who wish access to these programs.

   NOTE

   > TECO and RNO are NOT released products supported by DIGITAL, and the inclusion of these programs on the distribution kit does not imply recommentation or endorsement by DIGITAL regarding their use. There is no commitment by DIGITAL to continue to include these programs in future distributions of RSTS/E.

   TECO is a character-oriented text editor which has been implemented on all major DEC operating systems. TECO has many powerful features as a text editor, and is especially popular among programmers. On the other hand, many users find TECO's set of commands rather cryptic, while others prefer line-oriented editors. For these users, an editor such as the new DEC editor, EDT, is more appropriate.

   RNO is a variant of the RUNOFF program. RNO is written in MACRO-11, and generally executes much faster than RUNOFF, which is written in BASIC-PLUS. However, RNO is not completely compatible with RUNOFF, and may sometimes produce different results.

   Documentation for both TECO and RNO is provided in the form of RUNOFF DOC files on the distribution kit.

2. MAKRTS is a new program for building Run-Time Systems from RSX task images. Its use is documented as comments in the program itself. It seems to have a problem building RTS's whose size are close to 3Kw. You may have to adjust the EXTSCT yourself.

3. STATUS is a program for monitoring the RSTS/E statistics. The statistics code is no longer a "hidden option" as it has been in previous versions of RSTS/E. The STATUS program takes the raw data gathered by the RSTS/E Exec and presents it.

NOTE

DIGITAL assumes no responsibility for the accuracy of data obtained by the statistics option, nor for the interpretation of that data. It is strongly recommended that you consult with DIGITAL representatives before undertaking any system monitoring operations.

4. Another new "feature" of RSTS/E V6C-03 is the use of MACRO-11 as a programming language to write mainline executable programs. This may be done under the following constraints:

1) User code may not generate EMT instructions, either explicitly or implicitly. Neither RSTS/E monitor calls, nor the executive calls for the RT-11 or RSX-11 operating systems may be used. No documentation is provided that describes these calls.

2) Any I/O operations to be performed by a user program must use the RMS-11 interface by issuing calls to the appropriate RMS routines. Note that, as FORTRAN-IV does not support the RMS-11 interface, user-written MACRO subroutines may not perform any I/O operations.

The RMS-11 MACRO Programmers Manual describes how to program under RMS. Although this manual was originally issued for the IAS and RSX-11M operating systems, practically all of the information in the manual also applies to RSTS/E. See Release Notes article 19.15.1 N for a list of exceptions. This manual will be updated later to include the information for RSTS/E.